wherein Y is H, OH or NH-C(O)-CH_3; and R_1, R_2, R_3 and R_4 represent the same or different alkyl groups of 1 to 18 carbon atoms.

REMARKS

Claim 16 has been amended to define the variables R_1, R_2, R_3 and R_4 of the Markush group. Basis can be found for this amendment on page 10 lines 15-17 of the Specification. This amendment does not change the scope of the claims nor add new material to the application.

The Examiner has provisionally rejected Claims 1-3 and 7-8 under U.S.C. 101 for double patenting. Applicants will address this rejection at a later date.

The Examiner has also rejected claims 1-15 under 35 U.S.C. 103(a) over U.S. Patent No. 5,698,688 ("Smith"), contending that Smith teaches that paper prepared with fiber having increased aldehyde modification will have increased wet strength, and that one of skill in the art would know how to optimize the degree of oxidation (or amount of aldehyde) on fiber thereby obtaining Applicants' claimed range of aldehyde content. Based on this reasoning, the Examiner concludes that Applicants' paper compositions comprising aldehyde modified fibers are obvious and their desirable properties are inherent in the papers described by Smith.

The Examiner further contends that claims 16-25 are obvious under U.S.C. 103(a) over Smith in view of Nooy et al. ("Nooy") contending that Nooy discloses the use of a nitroxyl radical mediator for oxidizing primary and secondary alcohols, as well as the method for obtaining the desirable range of aldehyde modification as claimed by Applicants. Applicants respectfully traverse both rejections.

According to the MPEP, Section 2143; "[t]o establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations."

Applicants' invention describes paper compositions comprising a cellulose fiber having between 1-20 mmol of aldehyde content per 100 g of cellulose fiber which is oxidized under specified reaction conditions. As illustrated throughout the Examples and the data contained therein, paper compositions

comprising Applicants' aldehyde-containing pulp demonstrate a simultaneous unexpected increase in both wet and dry strength.

By contrast, Smith (See Abstract) describes a method of making paper comprising a modified cellulose fiber where the modification is carried out by (1) esterifying the cellulosic fibers with a 1-2-disubstituted alkene (See chemical structure in Smith, column 6) and then (2) oxidizing the esterified fibers to form aldehyde groups. (See chemical structure in Smith, column 7). Smith teaches that "[d]uring the oxidation step, aldehyde groups are formed on the carboxylic alkene residue of the intermediate cellulosic fibers." (See Smith, column 6, line 66) Accordingly, Smith teaches that in order to increase the wet strength of paper the cellulose fiber must first be esterified with a group containing a double bond (the 2,3-disubstituted alkene). Then, that double bond is oxidized to form an aldehyde. Unlike Applicants, Smith does not teach or suggest a process that is useful for obtaining aldehyde groups located directly on cellulose fibers. Since Smith's aldehyde-modified fibers are fundamentally different from Applicants' fibers, no optimization exercize will enable one of skill in the art to obtain Applicants' paper compositions. Nooy does not cure these deficiencies.

Applicants agree that Nooy describes a process for oxidizing primary and secondary alcohols via the use of a nitroxyl radical mediator and also that Nooy alleges that it is possible to stop the reaction at the aldehyde stage. However, in order to obtain the Nooy aldehyde intermediate, the oxidation reaction must be carried out in an organic solvent with little or no water present. (Nooy, page 8027 lines 6-9) Based on Nooy one of skill in the art would not expect Applicants' oxidation, which does not require the presence of an organic solvent, to produce aldehyde on the fiber. However, as illustrated throughout the examples in the instant Specification, Applicants' aldehyde-modified fibers may be obtained even if the oxidation is conducted in 100% water. Accordingly, Nooy actually teaches against Applicants' invention. Neither Smith or Nooy, either singly or in combination describe or suggest Applicants' inventive process.

In conclusion, it is requested that the rejections of Claims 1-24 be withdrawn. It is asserted that, as amended, Claims 1-24 are in condition for allowance. Reconsideration and favorable action is therefore earnestly solicited.

The Examiners is invited to call the undersigned if there are further questions regarding this amendment or the information contained herein.

Respectfully submitted,

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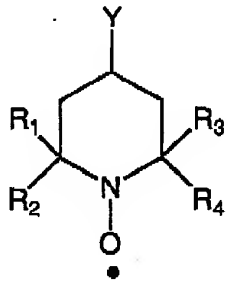
Marked up Version to show Changes to the Claims

16. (amended)The method of Claim 15 wherein the nitroxyl radical [catalyst] has the formula:



wherein Y is H, OH or NH-C(O)-CH_3, and R_1, R_2, R_3 and R_4 represent the same or different alkyl groups of 1 to 18 carbon atoms.